State Maps and Prescriptive Packages

April 2000

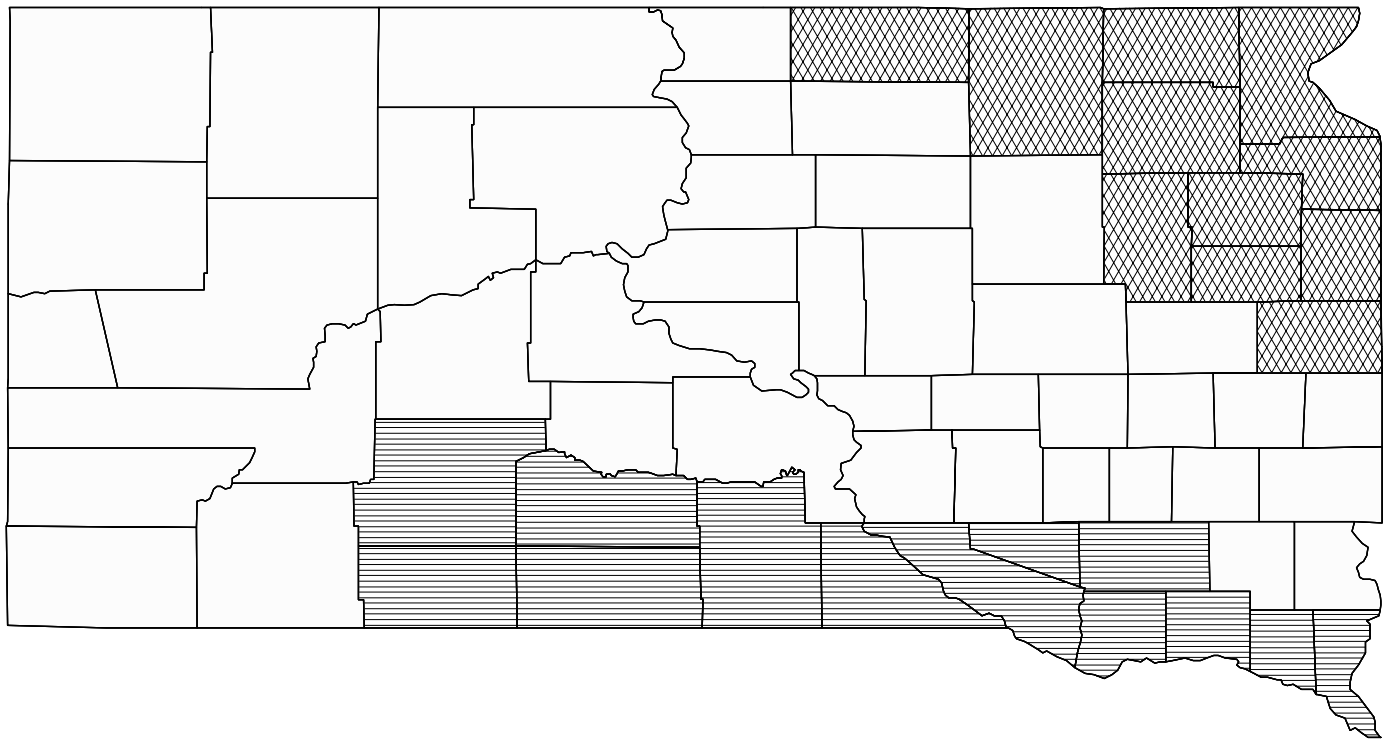
The State Maps and Prescriptive Packages contain supporting materials that are needed when using the Envelope and Mechanical Compliance Guides. Insulation and other building envelope requirements and some mechanical system requirements vary by climate. The State Maps divide the United States into 33 different climate zones at a county level. Zones are numbered from 1 through 19 (consistent with the IECC and MEC*check* climate zones) and have a, b, and c designations to reflect climate differences that affect cooling; e.g., cooling degree days and solar radiation. The climate maps are unchanged from Version 1.

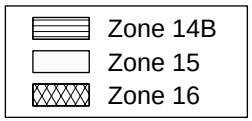
To determine the climate zone to use with your building, locate the map for your state and identify the zone number from the legend or county list.

To determine insulation and other building envelope requirements, find the prescriptive package number corresponding to your climate zone. The *Envelope Compliance Guide* employs a package approach that requires all components in your design to meet or exceed the prescribed efficiency levels contained in the prescriptive package. If you find the prescriptive packages too constraining, consider using the COM*check-EZ* software, which allows tradeoffs among building envelope components.

SOUTH DAKOTA

Zone	County
15	Aurora
15	Beadle
14B	Bennett
14B	Bon Homme
16	Brookings
16	Brown
15	Brule
15	Buffalo
15	Butte
15	Campbell
14B	Charles Mix
16	Clark
14B	Clay
16	Codington
15	Corson
15	Custer
15	Davison
16	Day
16	Deuel
15	Dewey
14B	Douglas
15	Edmunds
15	Fall River
15	Faulk
16	Grant
14B	Gregory
15	Haakon
16	Hamlin
15	Hand
15	Hanson
15	Harding
15	Hughes
14B	Hutchinson
15	Hyde
14B	Jackson
15	Jerauld
15	Jones
15	Kingsbury
15	Lake
15	Lawrence
15	Lincoln
15	Lyman
16	Marshall
15	Mccook
16	Mcpherson
15	Meade
14B	Mellette
15	Miner
15	Minnehaha
15	Moody
15	Pennington
15	Perkins
15	Potter
16	Roberts
15	Sanborn
15	Shannon
15	Spink
15	Stanley
15	Sully
14B	Todd
14B	Tripp
15	Turner
14B	Union
15	Walworth
14B	Yankton
15	Ziebach





COMcheck-EZ™ Prescriptive Packages Climate Zone 14b

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)				Medium Fenestration Area (10%-25% Window-Wall Ratio)				High Fenestration Area (25%-40% Window-Wall Ratio)				Very High Fenestration Area (40%-50% Window-Wall Ratio)			
Walls (a,b)	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA		13	11	NA		13	11	NA		13	11	NA		13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA		3	0	NA		3	0	NA		3	0	NA		7	3
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		11	11	NA		11	11
with Integral Insulation(e) *Minimum Continuous R-Value*	5		0	0	5		0	0	5		0	0	5		0	0
All Other *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		11	11	NA		11	11
Masonry Walls(f) *Minimum Continuous R-Value*	5		0	0	5		0	0	5		0	0	5		0	0
Windows	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	Any		Any	Any	0.5		0.6	0.7	0.4		0.5	0.6	0.4		0.5	0.6
Maximum U-Factor	0.7		0.7	0.7	0.5		0.5	0.5	0.5		0.5	0.5	0.4		0.4	0.4
Skylight (Limit 3% of Roof Area)																
Maximum U-Factor			0.8				0.8				0.8				0.8	
Roof	Continuous Insulation	or		Roof Cavity Insulation	Continuous Insulation	or		Roof Cavity Insulation	Continuous Insulation	or		Roof Cavity Insulation	Continuous Insulation	or		Roof Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	19			25	19			25	23			30	23			30
Nonwood Joist/Truss *Minimum R-Value*	20			25	20			25	24			30	24			30
Concrete Slab or Deck *Minimum R-Value*	19			NA	19			NA	23			NA	23			NA
Metal Purlin with Thermal Break *Minimum R-Value*	20			30	20			30	24			X	24			38
Metal Purlin without Thermal Break *Minimum R-Value*	20			X	20			X	24			X	24			49
Floor	Continuous Insulation	or		Cavity Insulation	Continuous Insulation	or		Cavity Insulation	Continuous Insulation	or		Cavity Insulation	Continuous Insulation	or		Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	19			25	19			25	19			25	19			25
Nonwood Joist/Truss *Minimum R-Value*	19			25	19			25	19			25	19			25
Concrete Slab or Deck *Minimum R-Value*	19			NA	19			NA	19			NA	19			NA
Slab Edge or Basement Walls	Insulation				Insulation				Insulation				Insulation			
Minimum R-Value	0				8				8				8			

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages Climate Zone 15

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)				Medium Fenestration Area (10%-25% Window-Wall Ratio)				High Fenestration Area (25%-40% Window-Wall Ratio)				Very High Fenestration Area (40%-50% Window-Wall Ratio)			
Walls (a,b)	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing	No Framing	or	Metal Framing	or Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA		13	11	NA		13	11	NA		13	11	NA		13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA		3	0	NA		3	0	NA		3	0	NA		7	4
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		11	11	NA		13	11
with Integral Insulation(e) *Minimum Continuous R-Value*	5		0	0	5		0	0	5		0	0	5		0	0
All Other *Minimum Cavity R-Value*	NA		11	11	NA		11	11	NA		13	11	NA		13	11
Masonry Walls(f) *Minimum Continuous R-Value*	5		0	0	5		0	0	6		0	0	6		3	0
Windows	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection	No Projection		[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	Any		Any	Any	0.5		0.6	0.7	0.5		0.6	0.7	0.4		0.5	0.7
Maximum U-Factor	0.7		0.7	0.7	0.5		0.5	0.5	0.4		0.4	0.4	0.4		0.4	0.4
Skylight (Limit 3% of Roof Area)																
Maximum U-Factor	0.6				0.6				0.6				0.6			
Roof	Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation		Continuous Insulation	or	Roof Cavity Insulation	
All-Wood Joist/Truss *Minimum R-Value*	19		25		19		25		23		30		23		30	
Nonwood Joist/Truss *Minimum R-Value*	20		25		20		25		24		30		24		30	
Concrete Slab or Deck *Minimum R-Value*	19		NA		19		NA		23		NA		23		NA	
Metal Purlin with Thermal Break *Minimum R-Value*	20		30		20		30		24		X		24		38	
Metal Purlin without Thermal Break *Minimum R-Value*	20		X		20		X		24		X		24		NA	
Floor	Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation		Continuous Insulation	or	Cavity Insulation	
All-Wood Joist/Truss *Minimum R-Value*	22		25		22		25		22		25		22		25	
Nonwood Joist/Truss *Minimum R-Value*	23		30		23		30		23		30		23		30	
Concrete Slab or Deck *Minimum R-Value*	22		NA		22		NA		22		NA		22		NA	
Slab Edge or Basement Walls	Insulation				Insulation				Insulation				Insulation			
Minimum R-Value	0				8				8				8			

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages Climate Zone 16

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)			Medium Fenestration Area (10%-25% Window-Wall Ratio)			High Fenestration Area (25%-40% Window-Wall Ratio)			Very High Fenestration Area (40%-50% Window-Wall Ratio)		
Walls (a,b)	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing
Framed *Minimum Cavity R-Value (c)*	NA	13	11	NA	13	11	NA	13	13	NA	13	13
Any Spacing *Minimum Continuous R-Value (d)*	NA	3	0	NA	3	0	NA	3	0	NA	14	7
CMU, 8 in. or greater *Minimum Cavity R-Value*	NA	11	11	NA	11	11	NA	13	11	NA	13	13
with Integral Insulation(e) *Minimum Continuous R-Value*	5	0	0	5	0	0	6	0	0	10	3	0
All Other *Minimum Cavity R-Value*	NA	11	11	NA	13	11	NA	13	13	NA	13	13
Masonry Walls(f) *Minimum Continuous R-Value*	5	0	0	9	3	0	9	3	0	9	3	3
Windows	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection	No Projection	[3].25 Projection	[3].5 Projection
Maximum Solar Heat Gain Coefficient	0.7	Any	Any	0.7	Any	Any	0.5	0.6	0.7	0.4	0.5	0.7
Maximum U-Factor	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
Skylight (Limit 3% of Roof Area)												
Maximum U-Factor		0.6			0.6			0.6			0.6	
Roof	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	19		25	23		30	23		30	23		30
Nonwood Joist/Truss *Minimum R-Value*	20		25	24		30	24		30	24		30
Concrete Slab or Deck *Minimum R-Value*	19		NA	23		NA	23		NA	23		NA
Metal Purlin with Thermal Break *Minimum R-Value*	20		30	24		X	24		X	24		38
Metal Purlin without Thermal Break *Minimum R-Value*	20		X	24		X	24		X	24		NA
Floor	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation
All-Wood Joist/Truss *Minimum R-Value*	22		25	22		25	22		25	22		25
Nonwood Joist/Truss *Minimum R-Value*	23		30	23		30	23		30	23		30
Concrete Slab or Deck *Minimum R-Value*	22		NA	22		NA	22		NA	22		NA
Slab Edge or Basement Walls	Insulation			Insulation			Insulation			Insulation		
Minimum R-Value	8			8			8			8		

Notes:

(a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.

(b) Where values are shown for both cavity and continuous insulation, both requirements must be met.

(c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.

(d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undimished by compression or bridging.

(e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

(f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.